Another report of Marchantia polymorpha after forest fires

Raymond H. Torrey

A note by the writer in a recent number of Torreya, on the extensive occurrence of *Marchantia polymorpha* after a forest fire on Kittatiny Mountain, in Warren County, New Jersey, has brought the following letter from Mr. William W. Diehl, Associate Pathologist, Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C.:

Your note on '*Marchantia polymorpha* after forest fires' in the first number of Torreya for this year is very timely to recent observations of mine.

On June 12, I was botanizing on the top, of Old Rag Mountain (Ragged Mountain) in Virginia, near Hoover's Camp, and was surprised at the great amount of *Marchantia polymorpha*, in some places covering an acre or more. The entire area had been burned over very badly some time during the past year so that I assumed then that Marchantia might well be one of the early comers after fires. This was of special interest to me in that I had the impression that Marchantia is generally thought of as rare in the southern Blue Ridge.

The large colonies of this hepatic, which I found on Kittatiny Mountain in autumn of 1931, a year after a great forest fire, which devastated over 3,000 acres, still remain, although some what less extensive now that new herbaceous and shrubby growth is returning. Their sudden and widespread seizure of the open areas of charred humus and thin mineral soil is puzzling to me, when it is considered that the dispersal of the spores of Marchantia is by means of hygroscopic elaters. One would not expect this method to scatter the spores more than a few yards from the parent plants.* I have usually found this hepatic in small colonies along brooks and on peat bogs. There are brooks and small swamps on Kittatiny Mountain, 200 to 400 feet below the highest ridges, where it might have occurred. But within less than a year after the fire, which occurred in August, 1930, Marchantia overspread large areas on the burned soil, with thalli several inches in diameter, confluent so as to completely and ex-

*Note by editor. It is probable that the elaters force the spores from the capsules when the wind causes changes in the humidity of the air and that, once out, the wind carries the spores.

clusively cover patches of many square yards. This was over a distance of two miles along the ridge, along the western edge of the burned area, well within the area, and along its eastern and southern edges. The spores might possibly have been transported from small colonies along a brook emptying Tock's Swamp, which was so wet that it escaped burning, outward a few rods, and have started new thalli on the bare burned soil, but it seems surprising that the crop of spores of the summer and early autumn of 1930 from plants in limited areas should have produced such extensive new growth by autumn of 1931. There was a rainy spell about a month after the fire and the charred soil was well wetted, which probably helped the Marchantia spores to germinate and develop new thalli. But that this extension should have covered many acres of the burned land, at elevations 10 to 300 feet above the previous possible occurrences of the hepatic in the swamp, within so short a time, seems an astonishingly prolific development. Yet Mr. Diehl's observations on Old Rag Mountain in Virginia indicates a similar phenomenon. How did the elaters carry the spores upward as seems to have occured. There can scarcely be any accidental transportation by animals, birds, or insects, over such distances from the swamp. The Marchantia colonies grew all over the burned area. which was three miles long and two miles wide. Nearly everything above ground outside of the swamp was killed. Yet the tiny spores of this hepatic survived in the swamp and soon after the blaze it was the first new plant to take over the black ashes.

Hollis, New York